

MARKED-UP SUBSTITUTE SPECIFICATION

ABSTRACT

An acoustic tool that provides a reduced tool mode and enhanced accuracy for estimating shear wave propagation slowness in slow formations is disclosed. In one embodiment, the acoustic tool comprises: an acoustic source, an array of acoustic receivers, and an internal controller. The acoustic source excites waves that propagate in a ~~quadrupole~~ quadrupole mode. The internal controller processes signals from the array of acoustic receivers to determine a peak phase semblance having a slowness value that varies with frequency. The minimum slowness value associated with the peak phase semblance provides an accurate estimate of the shear wave propagation slowness. The acoustic source preferably includes four source elements. The elements that are 90° apart are preferably driven in inverse-phase to obtain the ~~quadrupole~~ quadrupole excitation pattern.